

DETAILED ACTION

Claim Status

1. Claims 2-7, 9-13, and 15-22 are pending.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
3. Authorization for an examiner's amendment was given in a telephone interview with Mr. Boris A. Matvenko (reg. 48,165) on June 5, 2009.
4. **In the claims:**

Claims 2-5, 9, 11-13, 15-16, 18, and 20 have been amended. Please replace all prior claims with the claims below.

1. **(Cancelled).**
2. **(Currently Amended).** The method of claim ~~4~~13 wherein a metadata is received at the ~~destination~~-fileserver from a repository node in the list of repository nodes.
3. **(Currently Amended).** The method of claim 2 further comprising:

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selecting the ~~destination~~-fileserver for receiving the metadata and the set of stub files.

4. **(Currently Amended)**. The method of claim ~~4~~13 further comprising:

selecting a share of data for receiving at said ~~destination~~-fileserver.

5. **(Currently Amended)**. The method of claim ~~4~~13 wherein the set of files is the set of files that have been accessed during a specified period; and

wherein the replacing each stub file step further comprises

recursively replacing the stub files associated with the files that were accessed within the specified period until all stub files associated with the set of files have been replaced.

6. (Original). The method of claim 5 wherein the specified period is a most-recent period.

7. (Previously Presented). The method of claim 3 wherein the metadata is associated with a file in the set of files and includes

a fileserver name where the file was created;

a size of the file;

the list of all repository nodes that maintain a replica of the file; and,

a content checksum of the file when the file was first created or last modified.

8. **(Cancelled)**.

9. **(Currently Amended)**. The system of claim ~~8~~21 further comprising

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a filter driver operative to intercept input/output activity initiated by client file requests and to maintain a list of modified and created files since a prior backup;

~~a policy cache operative to store a protection policy associated with a share;~~

~~a mirror service in communication with the filter driver and with the policy cache, the mirror service configured to prepare modified and created files in a share to be written to a repository as specified in the protection policy associated with the share.~~

10. (Previously Presented). The system of claim 9 further comprising:

a location cache in communication with the mirror service and configured to indicate which repository should receive an updated version of an existing file; and

a location manager coupled to the location cache and configured to update the location cache when the system writes a new file to a specific repository node.

11. **(Currently Amended)**. The system of claim ~~8~~21 further comprising

a local repository having:

a local repository node API configured to communicate with the fileserver API;

a local repository file transfer module in communication with the fileserver file transfer module and configured to transfer files to the fileserver file transfer module; and

a data mover in communication with the local repository node API and configured to supervise the replication of files from the local repository to the fileserver.

12. **(Currently Amended)**. The system of claim 11 wherein the fileserver API is configured to communicate with a network and wherein the system further comprises:

a remote repository having:

a remote repository node API configured to communicate with the network;

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a remote repository file transfer module in communication with the local file transfer module and configured to transfer files to the fileserver file transfer module; and

a data mover in communication with the remote repository node API and configured to supervise the replication of files from the remote repository to the fileserver.

13. **(Currently Amended)**. A method for storing data, the method comprising:

providing a fileserver having:

a file system ~~[[operative]]~~ configured to store client files;

a policy component configured to store a protection policy associated with a set of files;

a mirror service in communication with the policy component, the mirror service ~~[[operative]]~~ configured to prepare modified and created files in a set of files to be written to a repository as specified in the protection policy associated with the set of files;

a fileserver API coupled to the mirror service and configured to communicate with a repository;

a fileserver file transfer module in communication with the file system and configured to transfer files for the file system to ~~[[and/or]]~~ at least one repository or transfer files for the file system from at least one repository; and,

a location updating component configured to maintain a list of repository nodes that contain a replica of each file in the set of files and a list of files in the set of files stored at the ~~destination~~ fileserver;

~~said fileserver is configured to~~ initiates recovery of files in the set of files on the fileserver, wherein based on the list of files and the list of repository nodes stored at said fileserver, a replica of a file in the list of files is recovered from a repository node in the list of repository nodes;

wherein using a stub file in the set of stub files~~[[,]]~~, ~~said fileserver is configured to~~ allows access to a full content of a file associated with the stub file by receiving a client request for a

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specified file in the set of files, replacing the stub file with the full content of the specified file associated with the stub file, and replacing remaining stub files in the set of stub files with respective full contents of remaining files in the set of files while replacing the stub file with the full ~~content~~content of the specified file;

determining a caching level for said fileserver; and

recursively, determining a utilization of the fileserver;

comparing the caching level against the utilization; and

creating a file migration candidate list when the utilization exceeds the caching level;

staging out one candidate file;

replacing the candidate file with a stub file; and

determining whether the utilization of the fileserver still exceeds the caching level,
wherein said determining if the utilization of the fileserver still exceeds the caching level further comprises staging out another candidate file on the candidate list and again determining if the utilization of the fileserver exceeds the caching level.

14. **(Cancelled).**

15. **(Currently Amended).** The method of claim ~~4~~13, wherein said replacing the stub file for the specified file is a higher priority task than replacing the stub files for non-requested files.

16. **(Currently Amended).** The system according to claim ~~8~~21, wherein the fileserver is configured to receives a metadata from a repository node in the list of repository nodes.

17. **(Previously Presented).** The system according to claim 16, wherein the metadata is associated with a file in the set of files and includes

a fileserver name where the file was created;
a size of the file;
the list of all repository nodes that maintain a replica of the file; and,
a content checksum of the file when the file was first created or last modified.

18. **(Currently Amended)**. The system according to claim ~~8~~21, wherein the set of files is the set of files that have been accessed during a specified period; and

wherein the recovery service is further configured to recursively replace the stub files associated with the files that were accessed within the specified period until all stub files associated with the set of files have been replaced.

19. **(Previously Presented)**. The system according to claim 18, wherein the specified period is a most-recent period.

20. **(Currently Amended)**. The method according to claim ~~13~~5, ~~wherein the set of files is the set of files that have been accessed during a specified period; and~~

wherein ~~the a~~ recovery service is ~~further~~ configured to recursively replace the stub files associated with the files that were accessed within the specified period until all stub files associated with the set of files have been replaced.

21. **(New)**. A system for storing data, the system comprising:

a fileserver having:

fileserver hardware;

a file system configured to store client files;

a policy component configured to store a protection policy associated with a set of files;

a mirror service in communication with the policy component, the mirror service configured to prepare modified and created files in a set of files to be written to a repository as specified in the protection policy associated with the set of files;

a fileserver API coupled to the mirror service and configured to communicate with a repository;

a fileserver file transfer module in communication with the file system and configured to transfer files for the file system to at least one repository or transfer files for the file system from at least one repository; and,

a location updating component configured to maintain a list of repository nodes that contain a replica of each file in the set of files and a list of files in the set of files stored at the fileserver;

said fileserver initiates recovery of files in the set of files on the fileserver, wherein based on the list of files and the list of repository nodes stored at said fileserver, a replica of a file in the list of files is recovered from a repository node in the list of repository nodes;

wherein using a stub file in the set of stub files, said fileserver allows access to a full content of a file associated with the stub file by receiving a client request for a specified file in the set of files, replacing the stub file with the full content of the specified file associated with the stub file, and replacing remaining stub files in the set of stub files with respective full contents of remaining files in the set of files while replacing the stub file with the full content of the specified file;

said mirror service is configured to:

determine a caching level for said fileserver; and

recursively, determine a utilization of the fileserver;

compare the caching level against the utilization; and

create a file migration candidate list when the utilization exceeds the caching level;

stage out one candidate file;

replace the candidate file with a stub file; and

determine whether the utilization of the fileserver still exceeds the caching level, wherein said determining whether the utilization of the fileserver still exceeds the caching level further comprises staging out another candidate file on the candidate list and again determining if the utilization of the fileserver exceeds the caching level.

22. (New). The system according to claim 21, wherein the set of files in the set of files that has been accessed during a specified period; and

wherein a recovery service is configured to recursively replace the stub files associated with the files that were accessed within the specified period until all stub files associated with the set of files have been replaced.

Allowable Subject Matter

5. Claims 2-7, 9-13, 15-22 are allowed.

6.. The following is a statement of reasons for the indication of allowable subject matter.

With respect to the independent claims, the prior art of record, single or in combination, does not teach or fairly suggest the step of: wherein using a stub file in the set of stub files, said fileserver allows access to a full content of a file associated with the stub file by receiving a client request for a specified file in the set of files, replacing the stub file with the full content of the specified file associated with the stub file, and replacing remaining stub files in the set of stub files with respective full contents of remaining files in the set of files while replacing the stub file with the full content of the specified file; determining a caching level for said fileserver; and recursively, determining a utilization of the fileserver; comparing the caching level against the utilization; and creating a file migration candidate list when the utilization exceeds the caching level; staging out one candidate file; replacing the candidate file with a stub file; and determining whether the

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utilization of the fileserver still exceeds the caching level, wherein said determining if the utilization of the fileserver still exceeds the caching level further comprises staging out another candidate file on the candidate list and again determining if the utilization of the fileserver exceeds the caching level, in combination with the other claimed limitations. Independent claim 21 recites similar limitations. The dependent claims are allowed for being dependent to an allowed claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL PHAM whose telephone number is (571)272-3924. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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